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STATE OF WASHINGTON

STATE BUILDING CODE COUNCIL

Washington State Energy Code Development

Standard Energy Code Proposal Form

Code being amended: ☒ Commercial Provisions ☐ Residential Provisions

Code Section # _____C405.2 Interior Lighting Allowance_____

Brief Description:

Multi-use or multi-purpose buildings and/or spaces provide many benefits including maximizing efficiencies of resources, space and energy use, yet can cause complexity when defining the building/space type. Although spaces with "simultaneous multi-functions" are addressed in the Space by Space method, no direction or code language is given within this section for "buildings or spaces that are occupied at different times for different purposes" making it unclear as to which lighting power allowance is allowed for those spaces.

The proposed code text change aims to clarify this, with the intent to ensure that the determined allowances are aligned with the energy consumption needs in order to provide appropriate illumination levels and lighting quality for the intended use(s) and function(s) of the space.

There is precedent for this kind of language and distinction in the International Building code Classifications, "A room or space that is intended to be occupied at different times for different purposes shall comply with all of the requirements that are applicable to each of the purposes for which the room or space will be occupied". Commentary for the International Building Code also helps clarify the scenario, "Occasionally, a building or space is intended to be occupied for completely different purposes at different times. For instance, a church hall might be used as a day care center during weekdays and as a reception hall for weddings and other similar events at other times. In these cases, the code provisions for each occupancy must be satisfied."

Relating that to the Energy Code Lighting Power Allowances, using space-by space types, a Church Hall Allowance would be 0.54 w/sf (Religious Building in Fellowship Hall), while a day care center would be 0.92 w/sf (Healthcare Facility in a Nursery) and a Reception Hall would be 0.97w/sf (Conference/meeting/multipurpose).

Under the Building Area Method, Church Hall Allowance would be 0.67 w/sf (Religious Building), while a day care center would be 0.7 w/sf (Healthcare Clinic) and a Reception Hall would be 0.64w/sf (Convention Center).

Another more extreme example would be a school multipurpose room that could be defined as a Dining Area (in Cafeteria) 0.4 w/sf or Gymnasium-Fitness Center 0.9w/sf or classroom/lecture hall/training room 0.71 w/sf. With the current language it would not be clear which allowance to use, while the proposed code change language would clarify that 0.9w/sf would be allowed for the space.

Currently in the space by space method, there is a type for "Conference/meeting/multipurpose" with 0.97w/sf. Should all "buildings or spaces that are occupied at different times for different purposes" use this 0.97w/sf allowance? If this is the case, this should be stated within C405.4.2.1.1 and C405.4.2.2.1 similar to how C405.4.2.2 lists the allowance for unfinished spaces.

Proposed code change text: (Copy the existing text from the Integrated Draft, linked above, and then use underline for new text and ~~strikeout~~ for text to be deleted.)

C405.4.2.1 Building area method. For the Building Area Method, the interior lighting power allowance is calculated as follows:

1. For each building area type inside the building, determine the applicable building area type and the allowed lighting power density for that type from Table C405.4.2(1). For building area types not listed, select the building area type that most closely represents the use of that area. ~~If a building area type has multiple functions for completely different purposes at different times, the highest lighting power allowance of the representative use types should be used.~~ For the purposes of this method, an "area" shall be defined as all contiguous spaces that accommodate or are associated with a single building area type.

2. Determine the floor area for each building are type listed in Table C405.4.2(1) and multiply this area by the applicable value from Table C405.4.2(1) to determine the lighting power (watts) for each building area type.

3. The total interior lighting power allowance (watts) for the entire building is the sum of the lighting power from each building area type.

C405.4.2.2 Space-by-space method Where a building has unfinished spaces, the lighting power allowance for the unfinished spaces shall be the total connected lighting power for those spaces, or 0.2 watts per square foot (10.76 W/m2), whichever is less. For the Space-by-Space Method, the interior lighting power allowance is calculated as follows:

1. For each area enclosed by partitions that are not less than 80 percent of the ceiling height determine the applicable space type from Table C405.4.2(2). For space types not listed, select the space type that most closely represents the proposed use of the space. Where a space has multiple functions, that space shall be broken up into smaller subspaces, each using their own space type. Any of these subspaces that are smaller in floor area than 20 percent of the enclosed space and less than 1,000 square feet need not be broken out separately. ~~If an entire space has multiple functions for completely different purposes at different times, the highest lighting power allowance of the representative use types should be used~~. If an entire space has multiple functions that necessitate a higher lighting power allowance in order to serve one of the primary functions, the higher allowance is permitted to be used.

2. Determine the total floor area of all of the spaces of each space type and multiply by the value for the space type in Table C405.4.2(2) to determine the lighting power (watts) for each space type.

3. The total interior lighting power allowance (watts) shall be the sum of the lighting power allowances for all space types.

Purpose of code change: The proposed code text change aims to clarify the methodology for choosing the correct allowance for “buildings or spaces that are occupied at different times for different purposes”, with the intent to ensure that the determined allowances are aligned with the energy consumption needs in order to provide appropriate illumination levels and lighting quality for the intended use(s) and function(s) of the space.

See more elaboration in the Brief Description Section.

Your amendment must meet one of the following criteria. Select at least one:

☐ Addresses a critical life/safety need.

☒ The amendment clarifies the intent or application of the code.

☐ Addresses a specific state policy or statute.
(Note that energy conservation is a state policy)

☐ Consistency with state or federal regulations.

☐ Addresses a unique character of the state.

☐ Corrects errors and omissions.

Check the building types that would be impacted by your code change:

☐ Single family/duplex/townhome

☒ Multi-family 4 + stories

☒ Institutional

☒ Multi-family 1 – 3 stories

☒ Commercial / Retail

☒ Industrial

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Economic Impact Data Sheet

Briefly summarize your proposal's primary economic impacts and benefits to building owners, tenants and businesses.

Provide your best estimate of the construction cost (or cost savings) of your code change proposal? (See OFM Life Cycle Cost **Analysis tool** and **Instructions;** use these **Inputs**. **Webinars on the tool can be found Here and Here**)

$Click here to enter text./square foot (For residential projects, also provide $Click here to enter text./ dwelling unit)

Show calculations here, and list sources for costs/savings, or attach backup data pages

Provide your best estimate of the annual energy savings (or additional energy use) for your code change proposal?

Click here to enter text.KWH/ square foot (or) Click here to enter text.KBTU/ square foot

(For residential projects, also provide Click here to enter text.KWH/KBTU / dwelling unit)

Show calculations here, and list sources for energy savings estimates, or attach backup data pages

List any code enforcement time for additional plan review or inspections that your proposal will require, in hours per permit application: